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Durham Comprehensive Plan

Chapter 9 Water and Wastewater Element

Durham City-County Planning Department

The Durham Comprehensive Plan

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Water and Wastewater Element



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Water is a basic human need and a fundamental service for municipal governments. Likewise, wastewater collection and treatment is also a fundamental service provided by many local governments. In recent years, Federal mandates have also made stormwater management a local government function. The central focus of the Water Utilities Element of the Durham Comprehensive Plan is to provide high quality utility services, while protecting the natural environment. Durham recognizes the importance for the community's health, safety and economic well being of keeping water, wastewater, and stormwater facilities well maintained and adequate to accommodate new development.

Summary of Issues

1. **Raw Water Sources.** Durham will need to develop new supplies of raw water to serve expected future populations. Which actions or combinations of action should the City take to provide the most reliable and cost-efficient water supply with the least adverse environmental impact?
2. **Regional Cooperation in Water Supply.** Durham must continue to work with Chatham, Orange and Person and potentially other counties on joint water supply initiatives, as well as adoption of local regulations that can preserve the present water quality, while taking into account the needs and concerns of these communities.
3. **Regional Cooperation in Water Treatment.** Regional water treatment arrangements may benefit multiple jurisdictions and maximize the efficiency of the jurisdiction's public infrastructure. What other opportunities exist for regional cooperation?
4. **Water Conservation.** Water conservation programs are aimed at reducing the use of potable water for residences and businesses. Water conservation will delay the need for new water supplies and facilities and minimize the impact of water shortages. What other approaches to water conservation could Durham implement to reduce water demand?
5. **Wastewater Treatment Capacity.** Future growth and development in Durham depends on sufficient wastewater treatment capacity. Projected wastewater treatment demand is

expected to reach 90 percent of plant capacity at the City's two wastewater treatment plants by 2017 and 2025. Durham will need to provide additional capacity by then, either through plant upgrade or building new facilities.

6. **Wastewater Treatment Standards.** Durham will likely face more stringent effluent standards at its wastewater treatment facilities, resulting in greater expense for wastewater treatment. Expensive upgrades to wastewater treatment facilities may be required in both the Cape Fear and Neuse River basins.
7. **Management of Septic Systems.** How involved should Durham become in the business of systematic monitoring and managing of on-site waste disposal systems?
8. **Stormwater Treatment Standards.** The State has set or will set standards for on-site stormwater management and nitrogen export. Durham will be required to enforce these additional State standards to maintain high water quality.

Goal 9.1, Water

Provide high quality potable water services to Durham's water service area in accordance with growth management objectives and policies.

Objective 9.1.1. Water Level of Service Standards

Establish level of service standards for water supply and treatment.

Policy 9.1.1a. Well Water Level of Service Standard. In the Rural Tier and in other locations where public water supply is not available, the level of service standard shall be a well or a community well permitted in accordance with applicable requirements of the Durham County Health Department.

Policy 9.1.1b. Public Water Level of Service Standard. Continue to operate and maintain water treatment and distribution facilities to provide 170 gallons per capita per day in compliance with standards established by the US Environmental Protection Agency and the State of North Carolina, and in accordance with City of Durham City engineering standards.

Objective 9.1.2. Water Supply

Continue to identify and develop sufficient new raw water supply sources to support Durham's future demand, while efficiently using present water supply sources.

Policy 9.1.2a. Teer Quarry. The Department of Water Management shall acquire and develop the abandoned Teer Quarry site in northern Durham as a storage facility for raw water and ensure water quality within the quarry.

Policy 9.1.2b. Jordan Lake Water Supply. The Department of Water Management shall continue to pursue water supply

allocations from Jordan Lake (in addition to the present 10 million gallon per day allocation).

Policy 9.1.2c. Future Water Supply Source. The Department of Water Management shall continue to assess long-range water supply options to identify the most efficient alternatives to meet Durham's long-term water supply needs, evaluating, at a minimum, the following:

- i. Expand the capacity of Lake Michie by constructing a new, and higher, dam downstream of the existing dam, raising the lake's water pool elevation;
- ii. Develop a new water supply on either the Flat River or the Little River; and
- iii. Obtain a water supply allocation from Kerr Lake.

Objective 9.1.3. Water Treatment and Distribution

Develop and maintain capacity for treatment and distribution of water sufficient to support Durham's present and future water demand, while encouraging efficient use through a robust water conservation program.

Policy 9.1.3a. Water Treatment Plant Capacity Expansion. The Department of Water Management shall continue to plan for increasing additional water treatment plant capacity with a target date for operation by 2008. Options for capacity expansion include expansion of the City's Brown Water Treatment Plant, construction of a new plant at Jordan Lake and purchase of treatment capacity from Cary.

Policy 9.1.3b. Finished Water Interconnections. The Department of Water Management shall develop new finished water interconnections with the City of Raleigh and Butner to improve system reliability and emergency response. Reinforce and expand the existing finished water interconnects with the Town of Cary, the Orange Water and Sewer Authority (OWASA) and Chatham County to enhance the system reliability and emergency response.

Policy 9.1.3c. Water Distribution System Plan. The Department of Water Management shall continue to update the City's Water Distribution System Master Plan every 5 to 7 years.

Policy 9.1.3d. Water Mains. The City Public Works Department shall continue to construct new and rehabilitate existing water mains to meet distribution needs. Program projects for inclusion in the annual Capital Improvements Program.

Policy 9.1.3e. Water Service Extension Outside the Urban Growth Area. The City Public Works Department shall continue to prohibit extensions of the water distribution system outside of the Urban Growth Area (UGA) except to properties with a verified water supply of unsatisfactory quantity or quality. Any extension as described above shall be contingent upon approval by the City

Council and shall be in accordance with applicable codes, policies, standards and specifications of the City.

Objective 9.1.4. Water Supply Protection

Protect Durham's and the Region's water supply sources from water quality degradation by maintaining low intensity land uses on land near water supply reservoirs, reducing the risk of pollution from stormwater running off impervious surfaces, and by reducing the risk of discharge of hazardous and toxic materials into the natural drainage systems tributary to drinking water reservoirs. Allow development and platting of lots in stream buffers only in limited, strictly regulated, and special conditions.

Policy 9.1.4a. Low Intensity Land Uses. The City-County Planning Department and the Inspections Services Department shall use the Unified Development Ordinance to maintain and enforce land use restrictions around water supply reservoirs.

Policy 9.1.4b. Watershed Critical Areas and Land Use. The City-County Planning Department shall use the Unified Development Ordinance to prohibit industrial land uses and maintain zoning that permits only low-density land uses in the Watershed Critical Areas, the most sensitive land near water supply reservoirs.

Policy 9.1.4c. Impervious Surface Credit Transfer. Through the Unified Development Ordinance, allow and establish procedures for the transfer of impervious surface credit from a donor parcel to a receiver parcel, provided that:

- i. The donor parcel and the receiver parcel shall be within the same water supply watershed;
- ii. The impervious surface credit transfer shall not be from a donor parcel in the Protected Area to the receiver parcel in the Critical Area; and
- iii. The portion of the donor parcel which is restricted from development shall remain in a vegetated or natural state and shall be placed in a permanent conservation easement granted to the City or County, or a land trust or similar conservation-oriented nonprofit organization.

Use of this tool shall allow a project to increase its impervious surface above the limits that would otherwise be required, but would not reduce the requirements to provide engineered stormwater systems for the receiver sites. (See Policy 2.2.7a. Impervious Surface Credit Transfer.)

Policy 9.1.4d. Land Acquisition for Buffers. To create a greater buffer around Lake Michie and other water supply sources, the Department of Water Management shall continue to acquire land from willing sellers.

Policy 9.1.4e. Reservoir Buffers. Through the Unified Development Ordinance, maintain undisturbed, naturally vegetated

Different Watersheds

Land use regulations for watershed protection are different in the watersheds of the various water supply reservoirs because of the differences in their size, their sensitivity to water quality degradation, and their State water supply classification.

buffers on land within 250 feet of water supply reservoirs, and prohibit development activities within the reservoir buffers.

Policy 9.1.4f. Stream Buffers. Through the Unified Development Ordinance, continue to require undisturbed, naturally vegetated buffers of at least 50 feet on land adjacent to intermittent and perennial streams and prohibit most development activities in order to protect water quality. Through the Unified Development Ordinance, limit the ability to utilize land in stream buffers to meet minimum lot size requirements, and allow development and platting of lots in stream buffers only in limited, strictly regulated, and special conditions. (See Policy 7.1.2c. Stream Buffers and Policy 9.4.2b. Stream Buffers.)

Objective 9.1.5. Regional Water Supply and Treatment Cooperation

Support and encourage regional cooperation in water supply and water treatment services when such cooperation improves the protection of public health and the environment; reduces the cost of water services; and improves the quality, delivery and overall reliability of water services to customers.

Policy 9.1.5a. Available Capacity of Neighboring Utility Systems. Where possible and cost-effective, Durham shall utilize any available finished water capacity of neighboring utility systems to provide for additional reliability during periods when demands approach available water supply and treatment capacity, and to defer additional water treatment capital projects. The Department of Water Management shall explore a potential cooperative agreement with the Town of Cary for using the Town's excess water treatment capacity related to Durham's Jordan Lake water allocation.

Policy 9.1.5b. Cooperation of Jordan Lake Water Treatment. The Department of Water Management shall investigate a cooperative agreement with the Orange Water and Sewer Authority (OWASA) and/or other interested water suppliers for operation of a water treatment facility to utilize allocations from Jordan Lake.

Goal 9.2, Wastewater

Provide wastewater collection and treatment services to Durham's service area, within the UGA and in accordance with growth management guidelines. Provide for the use by property owners of on-site ground absorption waste disposal systems where public wastewater utilities have not or will not be extended. Plan for the use of high quality treated wastewater (reclaimed water) for use for irrigation and other approved uses.

Objective 9.2.1. Wastewater Level of Service Standards

Establish level of service standards for wastewater collection and treatment.

Policy 9.2.1a. Wastewater Collection Level of Service Standards. The City Public Works Department and the County Engineering Department shall continue to operate and maintain wastewater collection facilities in compliance with standards established by the US Environmental Protection Agency and the State of North Carolina, and in accordance with Durham City and County engineering standards.

Policy 9.2.1b. Wastewater Treatment Level of Service Standards. The Department of Water Management and the County Engineering Department shall treat wastewater and resulting effluent and sludge in compliance with applicable National Pollutant Discharge Elimination System (NPDES) permits and within standards established by the US Environmental Protection Agency and the State of North Carolina.

Policy 9.2.1c. On-Site Disposal System Level of Service Standard. In the Rural Tier and in other locations where public wastewater collection and treatment is not available, the level of service standard shall be an operating on-site disposal system or a community wastewater treatment system permitted in accordance with applicable requirements of the County Health Department.

Objective 9.2.2. Wastewater Collection

Construct, operate and maintain in a cost-effective manner a wastewater collection system that serves the citizens and businesses inside the Urban Growth Area and protects the natural environment.

Policy 9.2.2a. Sewer Rehabilitation. The City Public Works Department shall continue to rehabilitate portions of the City's wastewater collection system by repairing, cleaning and replacing mains and outfalls, and shall use flow monitoring and television examination to monitor problem areas and program rehabilitation actions as needed.

Policy 9.2.2b. Upgrade the Wastewater Collection System. The City Public Works Department shall continue to upgrade Durham's wastewater collection system to meet collection needs, including constructing sewer lines by petition, constructing sewer lines, rehabilitating wastewater lines, and making wastewater collection system improvements in advance of street paving.

Policy 9.2.2c. Sewer Pump Station Removal. The Department of Water Management shall seek funding to remove pump stations in the City's wastewater collection system that are located close to existing sewer outfalls in order to reduce operation and maintenance costs.

Policy 9.2.2d. Sewer Service Extension Outside the Urban Growth Area. The City Public Works Department and the

County Engineering Department shall continue to prohibit extensions of the sewer collection system outside of the Urban Growth Area (UGA), except to properties with a verified existing health hazard from an on-site sanitary sewer system. Any extension as described above shall be contingent upon approval by the City Council and shall be in accordance with applicable codes, policies, standards and specifications of the City.

Objective 9.2.3. Wastewater Treatment

Develop and maintain capacity for cost-effective wastewater treatment sufficient to support Durham's present and future demand, while meeting or exceeding State and Federal effluent standards and protecting the natural environment.

Policy 9.2.3a. Water Reclamation Plant Renovation. The Department of Water Management shall renovate the North Durham Water Reclamation Facility and the South Durham Water Reclamation Facility, and County Engineering Department shall renovate the Triangle Wastewater Treatment Plant as needed to maintain efficient and cost-effective operation.

Policy 9.2.3b. Wastewater Treatment in the Rural Tier. The City-County Planning Department in conjunction with the Environmental Affairs Board and the County Health Department shall explore and propose regulatory provisions in the Unified Development Ordinance for wastewater treatment in the Rural Tier that facilitate conservation-by-design and clustered residential and nonresidential development while protecting the Region's water supplies.

Objective 9.2.4. Regional Cooperation

Support and encourage regional cooperation in wastewater services when such cooperation improves the protection of public health and the environment; reduces the cost of wastewater services; and improves the quality, delivery and overall reliability of wastewater services to customers.

Policy 9.2.4a. Collaboration Between Durham, and the Orange Water and Sewer Authority. The Department of Water Management and the County Engineering Department shall seek opportunities to collaborate between the City of Durham, Durham County and the Orange Water and Sewer Authority (OWASA) regarding discharges into tributaries of Jordan Lake.

Policy 9.2.4b. Collaboration with Other Jurisdictions. The Department of Water Management shall continue discussions with other jurisdictions in the Upper Neuse River basin to investigate opportunities to collaborate on discharges into Falls Lake Basin.

Goal 9.3, Resource Conservation and Recovery

To integrate pollution prevention and resource conservation into all operations of local government, to reduce the environmental impacts of local government, and to minimize costs associated with waste management.

Objective 9.3.1. Water Conservation

Reduce per capita water usage in the Durham water service area.

Policy 9.3.1a. Water Audit and Leak Detection Study. The Department of Water Management shall continue to implement recommendations from the 2008 water audit and leak detection study.

Policy 9.3.1b. Water Conservation Program. The Department of Water Management shall continue to monitor and evaluate water consumption of all customers and the costs and effectiveness of adopted water conservation actions and program activities.

Policy 9.3.1c. Water Rates. The Department of Water Management proposed and the City Council adopted a rate structure that encourages water conservation.

Policy 9.3.1d. Educate Households on Water Conservation. In order to offset the economic impact of higher rates in the future, the City Manager's Office and the Department of Water Management shall provide households with information about how to save water.

Policy 9.3.1e. Provision of Household Water Conservation Resources. In order to offset the economic impact of higher water rates in the future, the City Manager's Office and the Department of Water Management shall develop programs to provide households with water-saving devices such as efficient showerheads, faucet aerators, and toilet tank displacement devices

Objective 9.3.2. Water Reclamation and Re-use

Promote opportunities for bulk use of reclaimed water from Durham's water reclamation facilities.

Policy 9.3.2a. Reclaimed Water Pilot Program. The Department of Water Management and the County Engineering Department shall plan and implement a pilot reclaimed water system near one of Durham's water reclamation or wastewater treatment facilities serving nearby City facilities, County facilities and/or private reclaimed water users.

Objective 9.3.3. Water and Wastewater Treatment Residuals

Develop long-range plan for the safe and efficient disposal of dewatered solids from Durham's water treatment plants and water reclamation facilities.

Policy 9.3.3a. Water and Wastewater Treatment Residuals Management Studies. The Department of Water Management and the County Engineering Department shall conduct studies to evaluate cost-efficient options for managing and disposing of water and wastewater treatment plant residual solids.

Policy 9.3.3b. Regional Water and Wastewater Treatment Residuals Management Facility. The Department of Water Management and the County Engineering Department shall continue dialogue with other utility providers in the Region about joint residual management options that take advantage of economies of scale.

Residuals Management

Water treatment processes and wastewater treatment processes produce leftover solid materials, called residuals. Durham has an obligation to dispose of these materials in an environmentally safe way.

Goal 9.4, Stormwater Management

Design, construct and maintain a stormwater management system that minimizes water quality degradation and water quantity impacts associated with stormwater runoff and preserves and utilizes the existing natural systems. Encourage low impact development design and "green" stormwater management strategies.

Objective 9.4.1. Stormwater Level of Service Standards

Establish level of service standards for managing stormwater quantity and quality.

Policy 9.4.1a. Water Quantity Level of Service Standard. The water quantity level of service standard shall be that new development will not increase the post-development peak runoff rate from the 1-year storm over the predevelopment peak runoff rate by more than 10 percent.

Policy 9.4.1b. Water Quality Level of Service Standard, Neuse River Basin. The level of service standard for water quality in the Neuse River basin shall be to ensure that new development limits nitrogen export to 3.6 pounds per acre per year. The nitrogen export limit may be met by using one or more of the following strategies:

- i. Limiting the amount of impervious surfaces;
- ii. Treating stormwater runoff to reduce nitrogen; or
- iii. Making payments of offset fees to the NC Wetland Restoration Fund.

Policy 9.4.1c. Water Quality Level of Service Standard, Watershed Protection Areas. The level of service standard for

water quality in watershed protection areas shall be deemed to be met by the treatment of the first 1-inch of stormwater runoff.

Policy 9.4.1d. Stormwater Management Standards for Compact Neighborhood and Downtown Tiers. The City Public Works and the City-County Planning Departments shall research and propose stormwater management standards that accommodate the development pattern of the Downtown and Compact Neighborhood Tiers and that are compatible with State and Federal requirements.

Policy 9.4.1e. Re-evaluating Stormwater Management Level of Service Standards. The City-County Planning Department, the City Public Works Department, and the County Engineering Department shall re-evaluate the stormwater management level of service standards specifically seeking to address run-off associated with the 30-year storm when considering changes to the Unified Development Ordinance to incorporate stormwater management requirements.

Objective 9.4.2. Natural Stormwater System

Protect the natural functions of stormwater management features.

Policy 9.4.2a. Development Regulation. Through the Unified Development Ordinance, maintain land use and development regulations to protect the natural functions of streams and water features.

Policy 9.4.2b. Stream Buffers. Through the Unified Development Ordinance, continue to require undisturbed, naturally vegetated buffers of at least 50 feet on land adjacent to intermittent and perennial streams and prohibit most development activities in order to protect water quality. Through the Unified Development Ordinance, limit the ability to utilize land in stream buffers to meet minimum lot size requirements, and allow development and platting of lots in stream buffers only in limited, strictly regulated, and special conditions. (See Policy 7.1.2c. Stream Buffers and Policy 9.1.4f. Stream Buffers.)

Objective 9.4.3. Managing Stormwater from Existing Development

Improve water quality and reduce stream degradation from stormwater runoff from existing development in Durham.

Policy 9.4.3a. Illicit Discharges. The City Public Works Department shall continue to operate a program to detect and eliminate significant hidden non-stormwater discharges either directly into receiving waters or indirectly via the stormwater conveyance system. The program shall:

- i. Identify problems and priority areas through stream monitoring and other means;
- ii. Trace the source of an illicit discharge;
- iii. Remove the source of the discharge; and

- iv. Include ongoing evaluation of program effectiveness.

Policy 9.4.3b. Industrial and Commercial Inspections. The City Public Works Department shall continue to conduct regular inspections of industrial and commercial operations to detect unauthorized discharges into the stormwater drainage system.

Policy 9.4.3c. Street Sweeping. The City Public Works Department shall continue to conduct a regular program of street sweeping to remove leaves, other organic debris, trash and other pollutants from street gutters in order to enhance the quality of stormwater runoff.

Policy 9.4.3d. Stormwater System Retrofit. The City Public Works Department shall continue to identify locations for cost-effective retrofit or improvements to the stormwater conveyance system that will improve the quality of stormwater runoff and/or reduce the potential for downstream flooding.

Objective 9.4.4. Stormwater from New Development

Durham will take actions to reduce pollution from stormwater runoff from new development, both during the construction process and after construction is complete.

Policy 9.4.4a. Sedimentation and Erosion Control. The County Engineering Department shall continue to regulate land-disturbing activity to control accelerated erosion and sedimentation in order to prevent the pollution of water and other damage to lakes, watercourses and other public and private property by sedimentation. No person shall initiate any land-disturbing activity that uncovers more than one acre without having an erosion control plan approved by the Sedimentation and Erosion Control Office. In accordance with the Durham Sedimentation and Erosion Control Ordinance, the erosion control plan shall:

- i. Identify critical areas on the site subject to severe erosion and offsite areas vulnerable to damage;
- ii. Limit time of exposure;
- iii. Limit exposed areas;
- iv. Control surface water originating upgrade of the exposed areas;
- v. Control sedimentation; and
- vi. Manage stormwater runoff to control the velocity at the point of discharge to minimize accelerated erosion of the site and increased sedimentation of the stream.

(See Policy 7.1.2a. Sedimentation and Erosion Control.)

Policy 9.4.4b. Development Review. The City Public Works Department and the County Engineering Department shall continue to review new development proposals, specifically development plans, site plans, and construction drawings, to ensure compliance with City of Durham or Durham County stormwater requirements, including:

- i. Stormwater impact assessment requirements for peak flow control;
- ii. Design of new best management practices (BMPs) to comply with requirements for watershed protection high density option; and
- iii. Neuse River Basin stormwater management requirements.

Policy 9.4.4c. Stormwater Impact. Through the Unified Development Ordinance, require that any person proposing new development assess potential flooding and water pollution impacts on existing downstream areas as a result of the new development. Prior to the approval of any preliminary plat or site plan, or the issuance of a building permit for any structure other than a single-family residence, the owner of the property proposed for development shall submit a Stormwater Impact Analysis which determines the impact of the increased stormwater runoff on downstream stormwater facilities and properties. The Stormwater Impact Analysis shall be required whenever:

- i. Proposed development anywhere in the County proposes to increase the peak runoff rate from wither the 2-year storm or the 10-year storm; or
- ii. Proposed development in the Neuse River basin proposes to increase peak runoff rate from the 1-year storm.

The Stormwater Impact Analysis shall comply with the requirements of the City Public Works Department Director or County Engineer, as appropriate. The City Public Works Department Director or County Engineer, as appropriate, shall determine the need for stormwater management facilities to address offsite impacts.

Policy 9.4.4d. Required Stormwater Management Facilities and Improvements. Through the Unified Development Ordinance, require that, for any land-disturbing activity which results in a significant increase in stormwater discharge, the City Public Works Department Director or the County Engineering Department Director, as appropriate, may require the developer to provide stormwater management facilities or make other improvements to the existing drainage system to address water quantity concerns, water quality concerns, or both if the proposed development will increase potential flood damages to existing properties or significantly increase pollutant levels in downstream receiving waters. The City Public Works Department Director or the County Engineering Department Director, as appropriate, shall determine pollution source hotspots, including but not limited to trash compactors and vehicle wash facilities, that require higher levels of treatment.

Policy 9.4.4e. Engineered Stormwater Controls, Neuse River Basin. Engineered stormwater controls shall be required for new development within the Neuse River basin if the post-development peak runoff rate from the 1-year storm increases by more than 10 percent, such that there is no net increase.

Policy 9.4.4f. Engineered Stormwater Controls, County-Wide.

Engineered stormwater controls may be required for new development anywhere in the County at the discretion of the City Director of Public Works Department or the County Engineer, as appropriate, if the post-development peak runoff rate from the 2-year and 10-year storms increases by more than 10 percent, such that there is no net increase.

Policy 9.4.4g. Stormwater Management and Redevelopment.

The City Public Works and the City-County Planning Departments shall research and propose specific measures to remove disincentives to redevelopment associated with requirements for nitrogen reduction and stormwater management.

Policy 9.4.4h. Stormwater Credit. For new development other than single-family residential development, the City Public Works Department shall continue to offer a credit against the ratepayer's stormwater service fee for measures that contribute to a reduction in peak discharge or an improvement in water quality, or for maintenance activities.

Policy 9.4.4i. Low Impact Design in Watershed Critical Areas.

To encourage use of low impact site design in Watershed Critical areas, require through the Unified Development Ordinance, that only those site plans which propose to use the high density option (employing greater impervious surface and engineered stormwater controls) in these areas shall require approval by the Governing Bodies. Site plans employing less impervious surface may be approved administratively unless other issues require plans to be reviewed by Governing Bodies.

Policy 9.4.4j. Floodplain Developments. The Unified Development Ordinance shall allow development and platting of lots in the 100-year floodplain only in limited, strictly regulated, and special conditions. To discourage fill in the floodplains and reliance on more natural drainage systems, require, through the Unified Development Ordinance, that site plans for projects in the Rural and Suburban Tiers that propose to use fill in the floodplain as part of their design shall require approval by the Governing Bodies. Such approval shall be granted only if the project results in a higher quality design than would otherwise be available.

Policy 9.4.4k. Alternative Stormwater Treatment. The City Public Works Department, the County Engineering Department and the City-County Planning Department shall develop and propose changes to the Unified Development Ordinance and other stormwater requirements to offer incentives for alternative stormwater treatment techniques, such as rain gardens, stormwater re-use, and natural stormwater retention areas.

Objective 9.4.5. Public Education and Outreach

Implement a public education program to distribute educational materials to the community about the impacts of storm water discharges

on water bodies and the steps that the public can take to reduce pollutants in storm water runoff.

Policy 9.4.5a. Educational Program. The City Public Works Department shall:

- i. Prepare and distribute informative newsletters;
- ii. Establish and maintain a telephone hotline for citizens to report suspected incidents of stormwater pollution;
- iii. Create and make presentations to schools and community groups about the stormwater runoff, and
- iv. Conduct workshops for the development community and for local government officials about the stormwater management program.

Policy 9.4.5b. Impervious Surfaces Mapping. The City-County Planning Department shall prepare a map showing, with the best available data, existing levels of impervious surfaces in Durham County, especially in the urbanized areas.

Revision History

- a. Changed the references to the agency responsible for implementation from the City Public Works Department to the City Water Management Department for Policy 9.1.3b, Finished Water Interconnections; Policy 9.1.3c, Water Distribution System Plan; Policy 9.2.2c, Sewer Pump Station Removal; and Policy 9.3.1a, Water Audit and Leak Detection Study, approved by City Council on September 5, 2006, approved by the Board of Commissioners on August 28, 2006.
- b. Added Policy 9.3.1c., Water Rates, with the Department of Water Management as the party responsible for implementation, approved by the Board of Commissioners on October 13, 2008, approved by City Council on January 5, 2009.
- c. Added Policy 9.3.1d., Educate Households on Water Conservation, with the Department of Water Management as the party responsible for implementation, approved by the Board of Commissioners on October 13, 2008, approved by City Council on January 5, 2009.
- d. Added Policy 9.3.1e., Provision of Household Water Conservation Resources, with the Department of Water Management as the party responsible for implementation, approved by the Board of Commissioners on October 13, 2008, approved by City Council on January 5, 2009.
- e. Changed the references to the agency responsible for implementation from the City Public Works Department to the Department of Water Management for Policy 9.1.3d, Water Mains; Policy 9.2.1a, Wastewater Collection Level of Service Standards; Policy 9.2.2a, Sewer Rehabilitation,

- approved by the Board of Commissioners on October 13, 2008, approved by City Council on January 5, 2009.
- f. Changed the references to the agency responsible for implementation from the Solid Waste Department to the City Public Works Department for Policy 9.4.3c, Street Sweeping, approved by the City Council on October 19, 2009 and the Board of Commissioners on October 26, 2009.
 - g. Policy 9.2.4a., Collaboration Between Durham, and the Orange Water and Sewer Authority, amended to indicate that focus of collaboration is on discharges into tributaries of Jordan Lake, approved by City Council on October 19, 2009, approved by Board of Commissioners on October 26, 2009.
 - h. Policy 9.2.4b., Collaboration with Other Jurisdictions, amended to indicate that focus of collaboration is on discharges into Falls Lake Basin, approved by City Council on October 19, 2009, approved by Board of Commissioners on October 26, 2009.
 - i. Policy 9.3.1a., Water Audit and Leak Detection Study, amended to indicate that implementation of water audit and leak detection study is ongoing, approved by City Council on October 19, 2009, approved by Board of Commissioners on October 26, 2009.
 - j. Policy 9.3.1b., Water Conservation Program, amended to indicate that focus study is completed and monitoring is ongoing, approved by City Council on October 19, 2009, approved by Board of Commissioners on October 26, 2009.
 - k. Policy 9.3.1c., Water Rates, amended to indicate that tiered rate structure was proposed and adopted, approved by City Council on October 19, 2009, approved by Board of Commissioners on October 26, 2009.